[0064] In Embodiment 2, the diagnosis support system **1** collects data from apparatuses to be monitored in each of the rolling mills **10A**, **10B**, **10C** and **10D**, analyzes the extracted data, and displays the analysis process and the analysis result, on the display device. In the analysis of the data, the diagnosis support system **1** classifies the data obtained from similar apparatuses to be monitored among the rolling mills **10A**, **10B**, **10C** and **10D**, into one group. For instance, when each of the rolling mills **10A**, **10B**, **10C** and **10D** has a finishing mill formed of seven rolling stands, the diagnosis support system **1** forms a group having 28 data items which correspond to the total number of the rolling stands, for each of the physical quantities such as a main motor current of the finishing mill and a roll force of the finishing mill. Then, in a similar way to that in Embodiment 1, the diagnosis support system **1** compares the features in each of the data items to each other, each in the group and between the groups, and specifies a data item indicating a different phenomenon from others, as the unusual phenomenon candidate item.

[0065] The diagnosis support system according to Embodiment 2 can increase the number of the data items which are objects to be compared, and accordingly can enhance the accuracy in specifying the unusual phenomenon candidate item, and can provide a more useful diagnostic material to the administrator or the user.

OTHER EMBODIMENTS

[0066] The manufacturing equipment to which the present invention can be applied is not only the rolling mill. For instance, the present invention can also be applied to a machine tool in which a plurality of machining centers having the same specification are installed. In this case, data obtained from these machining centers may be packaged into one group.

REFERENCE SIGNS LIST

[0067] **1**: Diagnosis support system
[0068] **2**: Data collecting device
[0069] **2a**: Recording device
[0070] **3**: Data analysis device
[0071] **4**: Data analysis range setting unit
[0072] **5**: Data grouping unit
[0073] **6**: Feature extracting unit
[0074] **7**: Unusual phenomenon specifying unit
[0075] **8**: Testing unit
[0076] **9**: Display device
[0077] **10**, **10A**, **10B**, **10C** and **10D**: Rolling mill
[0078] **26**: Finishing mill
[0079] **260**: Rolling stand

1. A manufacturing equipment diagnosis support system comprising:
   a data collecting device which always or intermittently collects and records respective data in a plurality of apparatuses to be monitored that are arranged in manufacturing equipment, or in a plurality of apparatuses to be monitored that are dispersedly arranged in a plurality of sets of manufacturing equipment;
   a data analysis device which analyzes the data that has been recorded in the data collecting device; and
   a display device which displays an analysis process and an analysis result of the data analysis device, wherein

the data analysis device comprises:
   a processor to execute a program; and
   a memory to store the program which, when executed by the processor, causes the data analysis device to serve as:
   a data analysis range setting unit that sets a range of analysis of data which has been recorded in the data collecting device, by a data item and a time period;
   a data grouping unit that inputs data existing in the range which has been set by the data analysis range setting unit from the data collecting device, classifies each of the data into a category based on specification and use condition of the apparatus from which the data has been collected, and a category based on a physical quantity which the data shows, and thereby groups the data which the data grouping unit has inputted from the data collecting device;
   a feature extracting unit that extracts a feature in each of the items of the data which have been grouped by the data grouping unit;
   an unusual phenomenon specifying unit that compares the features of each of the data items which have been extracted by the feature extracting unit to each other, each in the group and between the groups, and when there is a data item indicating a different phenomenon from others, specifies the data item as an unusual phenomenon candidate item; and
   a testing unit that tests whether there is a significant difference or not between the unusual phenomenon candidate item which has been specified by the unusual phenomenon specifying unit and the other data item, and when there is a significant difference therebetween, determines the data item which has been specified to be the unusual phenomenon candidate item, as the unusual phenomenon item.

2. The manufacturing equipment diagnosis support system according to claim **1**, wherein
   the data grouping unit equalizes the number of the data items in each group, among the groups, gives an intra-group data number to each of the data items for identification in the group, and gives a group number to each of the data items for identification among the groups.

3. The manufacturing equipment diagnosis support system according to claim **1**, wherein
   the feature extracting unit calculates the same types of features, for two of original data and deviation between a signal obtained by filtering the original data and the original data.

4. The manufacturing equipment diagnosis support system according to claim **3**, wherein
   the unusual phenomenon specifying unit compares the features between the data items in the same group;
   when there is a data item of which the magnitude of the feature is different from that of the other data item by a predetermined ratio or more, specifies the data item as an unusual phenomenon candidate item of a first level; and
   when the a item which is common in the apparatus to be monitored has been specified as the unusual phenomenon candidate item of the first level over a plurality of groups, specifies the data item as an unusual phenomenon candidate item of a second level.